



PATENT APPLICATION

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

In re application of

Docket No: ST9-99-080 (A8492)

Melvin Richard ZIMOWSKI

Appln. No.: 09/602,412

Group Art Unit: 2141

Confirmation No.: 9095

Examiner: Joseph D. SHAW

Filed: June 23, 2000

For: TECHNIQUE FOR MAINTAINING AND MANAGING DYNAMIC WEB PAGES
STORED IN A SYSTEM CACHE AND REFERENCED OBJECTS CACHED IN
OTHER DATA STORES

SUBMISSION OF APPELLANT'S BRIEF ON APPEAL

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Sir:

Submitted herewith please find an original and two copies of Appellant's Brief on Appeal. A check for the statutory fee of \$330.00 is attached. The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account. A duplicate copy of this paper is attached.

Respectfully submitted,

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APPELLANTS' BRIEF ON APPEAL UNDER 37 C.F.R. § 1.192

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In accordance with the provisions of 37 C.F.R. § 1.192, Appellant submits the following:

I. REAL PARTY IN INTEREST

The real party in interest in this appeal is International Business Machines Corporation (“IBM”) of Armonk, New York, by virtue of an assignment executed by Melvin Richard Zimowski (Appellant, hereinafter), recorded by the Assignment Branch of the U.S. Patent and Trademark Office on June 23, 2000 (at Reel 010934, Frame 0557).

II. RELATED APPEALS AND INTERFERENCES

To the knowledge and belief of Appellant, Appellant's legal representative or the assignee, there are no other appeals or interferences before the Board of Appeals and

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Interferences that will directly affect or be affected by, or have a bearing on, the Board's decision in the instant Appeal.

III. STATUS OF CLAIMS

Claims 1-39 are the claims pending in the application and are the subject of this appeal.

A copy of the claims on appeal are set forth in an attached Appendix.

IV. STATUS OF AMENDMENTS

All Amendments submitted have been entered. A Response Under 37 C.F.R. § 1.116 was filed on April 19, 2004, in response to a Final Office Action (Paper No. 13), and the Examiner indicates in the Advisory Action (Paper No. 15) that the Response was considered.

V. SUMMARY OF THE INVENTION

The invention relates to methods, apparatuses, and articles of manufacture for managing dynamic web pages and objects referenced by the web pages.

In the Internet environment, there are two type of web pages, static web pages and dynamic web pages. Static web pages are pre-generated before a client request for these pages is issued. Dynamic pages, on the other hand, are generated at the time of a client's request. The data for the dynamic web page is obtained dynamically at the web servers. In conventional systems, web servers often cache the dynamic web pages for easier access. Both types of web pages can reference other objects using hypertext links, for example.

When web pages are generated dynamically it is not possible to predetermine the objects that will be referenced within those web pages that use hypertext links to link to objects. In conventional systems incomplete web pages can be displayed at the web browser since such

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conventional systems do not ensure that objects referenced by a web page are present when serving the page. *See* page 2 of the specification. Accordingly, there is a need to maintain and automatically manage cached dynamic web pages and the objects referenced by those web pages.

The present invention solves that problem by using a computer program that determines that a web page should be cached and that the web page references other objects. The computer program instructs the computer to store those referenced objects in one or more data stores and caches the corresponding web page in the cache. The program automatically manages the cached web pages and those stored referenced objects to ensure the display of a complete web page.

An exemplary use of the techniques described in the application is set forth at page 7 of the specification. In this example, when a web page is cached, all the objects referenced in the web page are stored in a data store. In addition, a web page is not returned to a user's browser until all referenced objects in the web page are successfully placed in the referenced object data store. When a web page is removed from the dynamic web page cache, any objects referenced by that web page are removed from the data store. When an object is removed from the referenced object data store, the web page that references that object is removed from the dynamic web page cache and any other objects referenced by that web page are removed from the referenced object data store. The cached web page is removed from the cache before any dependent objects are removed from the referenced object data store. In this way an incomplete web page stored in the cache is not served to a user. *See* page 11 of the specification.

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Referring to Fig. 2, an exemplary flow chart illustrates the steps performed in managing the contents of the dynamic web page system cache and related data stores that contain the objects the cached web pages reference, to ensure that only complete web pages are displayed at a user's browser. At block 200, a request is made to generate a dynamic web page. The system, in accordance with this exemplary embodiment, retrieves data responsive to the request and places that data in a dynamically generated web page, as represented by block 202. The retrieved data may be linked to other stored data. Block 204 represents caching the retrieved data and the linked data and block 206 represents the management of the cached data and related data stores. *See* page 23 of the specification.

VI. ISSUES

- 1) Whether claims 1, 2, 4, 13, 14, 16, 25, 26, 28, 37-39 are anticipated under 35 U.S.C. § 102(b) by the Challenger et al. publication *Distributed Cache Manager and API* (hereinafter "Challenger").
- 2) Whether claims 5, 6, 17, 18, 29, and 30 are unpatentable under 35 U.S.C. § 103(a) over Challenger.
- 3) Whether claims 3, 15, and 27 are unpatentable under 35 U.S.C. § 103(a) over Challenger in view of Mattis et al. (U.S. Patent No. 6,209,003).
- 4) Whether claims 7, 8, 19, 20, 31, and 32 are unpatentable under 35 U.S.C. § 103(a) over Challenger in view of Burns et al. (U.S. Patent No. 5,991,306).

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- 5) Whether claims 9, 21, and 33 are unpatentable under 35 U.S.C. § 103(a) over Challenger in view of Mattis et al. (U.S. Patent No. 6,209,003) and Schultz et al. (U.S. Patent No. 6,453,339).
- 6) Whether claims 10, 22, and 34 are unpatentable under 35 U.S.C. § 103(a) over Challenger in view of Mattis et al. (U.S. Patent No. 6,209,003), Schultz et al. (U.S. Patent No. 6,453,339) and Acharya et al. (U.S. Patent No. 6,408,296).
- 7) Whether claims 11, 23, and 35 are unpatentable under 35 U.S.C. § 103(a) over Challenger in view of Burns et al. (U.S. Patent No. 5,991,306) and Scarr et al. (U.S. Patent No. 5,659,547).
- 8) Whether claims 12, 24, and 36 are unpatentable under 35 U.S.C. § 103(a) over Challenger in view of Burns et al. (U.S. Patent No. 5,991,306), Scarr et al. (U.S. Patent No. 5,659,547), and Acharya et al. (U.S. Patent No. 6,408,296).

VII. GROUPING OF CLAIMS

For purposes of the present appeal, the rejected claims do not stand or fall together and arguments for patentability of each of the following groups of claims, are set forth below.

Group I: Claims 1, 2, 4-14, 16-26 and 28-39, each of which stand or fall together.

Group II: Claims 3, 15 and 27, each of which stand or fall together.

VIII. ARGUMENTS

Appellant respectfully requests the Board to reverse the Examiner's final rejections of the claims pending in the application for at least the following reasons.

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A. **Group I: The § 102(b) Rejection Over Challenger**

The Examiner rejects claim 1 and all of the other independent claims (i.e., claims 13 and 25) as being anticipated by Challenger, specifically the section titled “Overview.” It is respectfully submitted that Challenger does not teach all the limitations of the independent claims and therefore does not anticipate those claims.

Claim 1, for example, recites the following features:

- i) determining that a web page is to be cached, wherein the web page references other objects;
- ii) storing the referenced objects in one or more data stores; and
- iii) automatically managing the cached web page and the referenced objects to ensure the display of a complete web page.

1. *The Challenger Reference*

Challenger relates to a cache manager that manages cached, dynamically generated HTML (hypertext markup language) pages for World Wide Web (WWW) sites.

Challenger discloses that a cached HTML page can be constructed from several other data aggregates, such as database tables. The HTML page is dependant upon the database tables because values held in the database tables are included in the dynamically generated HTML page. (See Challenger pg. 2, “Overview.”) Accordingly, if one of those values held in the database table changes, the HTML page, to remain current, would have to change to reflect the updated value. However, since the cached HTML page is static (see pg. 5, lines 16-18 of the

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present specification “A cached page is static...”) a change to the value in the database would not change that value in the cached HTML page and the page becomes stale.

Challenger is directed to invalidating a cached HTML page when an update occurs to a database value that is used in the HTML page. A list of dependencies associated with the cached web page specifies database tables that hold values that are used in the cached HTML page. Challenger discloses that when a value in a database table is updated the dependency list is used to invalidate all the cached HTML pages that depend on that database table, and hence, purge those pages from the cache. (See Challenger section “Cache Coherency.”) In this manner the cache does not contain HTML pages with stale data. Accordingly, when the database table is updated, the dependency is used to delete all web pages that are built using the updated database table.

2. *The Rejection: Claims 1, 13 and 25*

The Examiner, in the final Office Action (¶ 2a) and in the Advisory Action, takes the position that the cached HTML web page disclosed by Challenger corresponds to the claimed cached web page. The Examiner asserts that the database table disclosed by Challenger corresponds to the claimed objects stored in one or more data stores that are referenced by the cached web page. The Examiner also asserts that merely specifying that the Challenger database has been updated corresponds to the claimed automatic managing of the referenced objects to ensure the display of a complete web page. The Examiner further asserts that merely invalidating a cached HTML page when a database value changes corresponds to the claim limitation of ensuring the display of a complete web page.

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The rejection should be reversed since the prior art does not support these assertions.

3. *Claims 1, 13 and 25 are not anticipated by Challenger*

Challenger does not disclose objects stored in one or more data stores that are referenced by a cached web page, because Challenger's cached HTML page (which the Examiner asserts corresponds to the claimed cached web page) does not reference Challenger's database tables (which the Examiner asserts corresponds to the claimed referenced objects).

The Overview section of Challenger, relied upon by the Examiner, merely discloses that "an HTML page could be constructed from several other data aggregates such as database tables." Challenger does not teach, or even suggest, that the HTML page references the database tables. It is respectfully submitted that once the HTML page is constructed from the database tables it does not reference the database tables since the HTML page would already contain the data obtained from the database tables. In the final Office Action (¶ 11m.) the Examiner urges that because Challenger's HTML web page is related to the database tables, since it was constructed from them, it necessarily references those database tables. It is respectfully submitted that the Examiner unreasonably and impermissibly attempts to broaden the claim by reading out the limitations relating to the cached web page referencing other objects. Accordingly, it is respectfully submitted that Challenger does not teach caching a web page that references other objects and therefore does not anticipate claim 1.

Considering next the Examiner's position that Challenger's disclosure of updating a database corresponds to the claimed element of automatically managing the referenced objects to ensure the display of a complete web page, the Examiner again impermissibly and unreasonably

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attempts to broaden the claim beyond recognition. By asserting that Challenger teaches automatically managing the database tables by disclosing in the third paragraph of the Overview that an API function specifies that the database table is updated, the Examiner attempts to read the limitation out of the claim. Although Challenger discloses “managing,” it does not disclose managing the database tables (i.e. the alleged “referenced object”). Challenger merely states that “the cache manager has been designed with the intention of *managing* cached, dynamically generated HTML pages.” Challenger neither teaches nor suggests *managing* the database tables as the Examiner asserts. Merely managing the cached HTML pages does not satisfy the limitation of claim 1 of “automatically managing … the referenced objects.” Accordingly, it is respectfully submitted that Challenger does not anticipate claim 1 for at least this reason as well.

The Examiner’s position that invalidating a cached HTML page when a database value changes corresponds to the claim limitation of ensuring the display of a complete web page, is not supported by the prior art. It is respectfully submitted that merely invalidating a cached HTML page when a database value changes does not satisfy the claim limitation of ensuring the display of a complete web page. Although Challenger discloses invalidating a cached HTML page if it contains a value that was taken from a database table that is subsequently updated, it is respectfully submitted that doing so is not sufficient to ensure the display of a complete web page. While the cached HTML page would include the most up to date information in the database, if the HTML page includes, for example, a link to another object outside the database and that object is not available, the cached web page will be served, but it will be incomplete

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because it will not include that other object. For at least this reason it is respectfully submitted that the claims of Group I are not anticipated

Claims 2, 4-14, 16-26 and 28-39 are not rendered obvious by Challenger and the various cited secondary references, i.e., Mattis, Burns, Schultz, Acharya, and Scarr, since those secondary references fail to cure the deficient teachings of Challenger discussed above. It is respectfully submitted that these secondary references, taken alone or in combination with Challenger, neither teach nor suggest automatically managing objects referenced by a web page to ensure the display of a complete web page, as required by claim 1.

For at least these reasons, the rejections of the claims of Group I are improper and should be reversed.

B. Group II: Claims 3, 15 and 27 Are Not Obvious Under §103 In View of Challenger and Mattis

The claims in Group II are rejected as being obvious over Challenger in view of Mattis. It is respectfully submitted that it would not have been obvious to a person of ordinary skill in the art, at the time of the invention, to modify the teachings of Challenger based on the teachings Mattis as asserted in the final Office Action since such a combination likely would degrade the Challenger system's providing valid cached pages.

Claim 3, for example, depends from claim 1 and recites, "when the web page is deleted from the cache, deleting the referenced objects."

Mattis et al. (U.S. Patent No. 6,209,003), hereinafter "Mattis," is cited for teaching a method for deleting fragments that are not active. Mattis discloses a garbage collection

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technique used in a cache that stores a number of informational objects. In particular, to determine whether to retain or delete a fragment of an object in a cache, Mattis applies a predetermined criterion, such as whether or not the object in question is referenced by a live web page. When a fragment of an object is deleted, all other fragments of an object are also deleted.

Even assuming Mattis discloses the features asserted by the Examiner, it is respectfully submitted that it would not have been obvious to modify the teachings of Challenger based on Mattis to delete Challenger's database tables that, according to the Examiner, are referenced by a web page that is purged from the cache. Challenger indicates that more than one cached web page might depend on the same database table. (*See* Overview, "This causes all cached objects which depend on the table to be invalidated.") If, as a result of one of those cached web pages being invalidated, a database table is deleted, as the Examiner asserts, another valid web page that also depends on that same database table would have to be invalidated since the table would be deleted. Accordingly, web pages in the cache that otherwise would remain in the cache could be invalidated due to the deletion of a database table, if Challenger were modified based on Mattis as the Examiner asserts. Since such a modification would destroy the operation of Challenger, it is respectfully submitted that it would not have been obvious to have made the asserted combination. Accordingly, the rejection of the claims in Group II should be reversed.

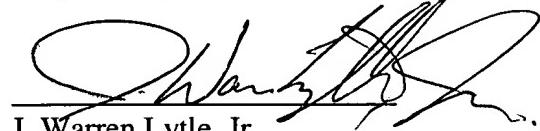
C. Conclusion

The present Brief on Appeal is being filed in triplicate. Unless a check is submitted herewith for the fee required under 37 C.F.R. §1.192(a) and 1.17(c), please charge said fee to Deposit Account No. 19-4880.

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The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

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APPENDIX

CLAIMS 1-39 ON APPEAL:

1. (previously presented): A method for managing data stored in a data storage device connected to a computer, comprising:
 - determining that a web page is to be cached, wherein the web page references other objects;
 - storing the referenced objects in one or more data stores;
 - caching the web page in a cache; and
 - automatically managing the cached web page and the referenced objects to ensure the display of a complete web page.
2. (original): The method of claim 1, further comprising, when one or more of the referenced objects is deleted, deleting the web page from the cache.
3. (original): The method of claim 1, further comprising, when the web page is deleted from the cache, deleting the referenced objects.
4. (original): The method of claim 1, further comprising, prior to determining that a web page is to be cached:
 - receiving a request to generate a dynamic web page; and

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retrieving data and placing the data in a dynamically generated web page, wherein the data is linked to other stored objects.

5. (original): The method of claim 4, wherein managing the cached web page and referenced objects comprises the steps of:

receiving a request from an administrator to delete the retrieved data based on administrator-provided input; and

deleting the retrieved data based on the administrator-provided input.

6. (original): The method of claim 4, wherein managing the cached data comprises the steps of:

receiving a request from an administrator to delete the linked objects based on an administrator-provided input; and

deleting the linked objects based on the administrator-provided input.

7. (original): The method of claim 1, further comprising, processing a caching directive that specifies whether the web page should be cached.

8. (original): The method of claim 1, further comprising, associating an expiration timestamp with the web page, wherein the expiration timestamp defines a time period in which the cached web page is valid.

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9. (original): The method of claim 8, wherein managing the cached web page and referenced objects further comprises automatically deleting the web page and the referenced objects when the expiration timestamp precedes a current timestamp.

10. (original): The method of claim 9, wherein deleting further comprises first, deleting the web page and second, deleting the referenced objects.

11. (original): The method of claim 8, wherein managing the cached web page and referenced objects comprises the steps of:

receiving a request from an administrator to delete all cached web pages according to some administrator-specified selection criteria; and

deleting all cached web pages and referenced objects that satisfy the administrator-specified selection criteria.

12. (original): The method of claim 11, wherein deleting further comprises first, deleting the web page and second, deleting the referenced objects.

13. (previously presented): An apparatus for processing a request that requires the dynamic generation of a web page, the apparatus comprising:
a computer; and

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one or more programs, performed by the computer, for determining that a web page is to be cached, wherein the web page references other objects, storing the referenced objects in one or more data stores, caching the web page in a cache, and automatically managing the cached web page and the referenced objects to ensure the display of a complete web page.

14. (original): The apparatus of claim 13, further comprising, when one or more of the referenced objects is deleted, deleting the web page from the cache.

15. (original): The apparatus of claim 13, further comprising, when the web page is deleted from the cache, deleting the referenced objects.

16. (original): The apparatus of claim 13, further comprising, prior to determining that a web page is to be cached, one or more computer programs, performed by the computer, for receiving a request to generate a dynamic web page, and retrieving data and placing the data in a dynamically generated web page, wherein the data is linked to other stored objects.

17. (original): The apparatus of claim 16, wherein managing the cached data comprises one or more computer programs, performed by the computer, for receiving a request from an administrator to delete the retrieved data based on an administrator-provided input, and deleting the retrieved data based on the administrator-provided input.

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18. (original): The apparatus of claim 16, wherein managing the cached data comprises one or more computer programs, performed by the computer, for receiving a request from an administrator to delete the linked objects based on a second user provided input, and deleting the linked objects based on the administrator-provided input.

19. (original): The apparatus of claim 13, further comprising one or more computer programs, performed by the computer, for processing a caching directive that specifies whether the web page should be cached.

20. (original): The apparatus of claim 13, further comprising one or more computer programs, performed by the computer, for associating an expiration timestamp with the web page, wherein the expiration timestamp defines a time period in which the cached web page is valid.

21. (original): The apparatus of claim 20, wherein managing the cached web page and referenced objects further comprises one or more computer programs, performed by the computer, for automatically deleting the web page and the referenced objects when the expiration timestamp precedes a current timestamp.

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22. (original): The apparatus of claim 21, wherein deleting further comprises one or more computer programs, performed by the computer, for first, deleting the web page and second, deleting the referenced objects.

23. (previously presented): The apparatus of claim 20, wherein managing the web page and referenced objects comprises one or more computer programs, performed by the computer, for receiving a request from an administrator to delete all cached web pages according to some administrator-specified selection criteria, and deleting all cached web pages and referenced objects that satisfy the administrator-specified selection criteria.

24. (original): The apparatus of claim 23, wherein deleting further comprises one or more computer programs, performed by the computer, for first, deleting the web page and second, deleting the referenced objects.

25. (previously presented): An article of manufacture comprising a computer program carrier readable by a computer and embodying one or more instructions executable by the computer to perform method steps for managing data stored in a data storage device connected to a computer, comprising:

determining that a web page is to be cached, wherein the web page references other objects;

storing the referenced objects in one or more data stores;

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caching the web page in a cache; and
automatically managing the cached web page and the referenced objects to ensure the display of a complete Web page.

26. (original): The article of manufacture of claim 25, further comprising, when one or more of the referenced objects is deleted, deleting the web page from the cache.

27. (original): The article of manufacture of claim 25, further comprising, when the web page is deleted, deleting the referenced objects.

28. (original): The article of manufacture of claim 25, further comprising, prior to determining that a web page is to be cached:

receiving a request to generate a dynamic web page; and
retrieving data and placing the data in a dynamically generated web page, wherein the data is linked to other stored objects.

29. (original): The article of manufacture of claim 28, wherein managing the cached web page and referenced objects comprises the steps of:

receiving a request from an administrator to delete the retrieved data based on an administrator-provided input; and
deleting the retrieved data based on the administrator-provided input.

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30. (original): The article of manufacture of claim 28, wherein managing the web page and referenced objects comprises the steps of:

receiving a request from an administrator to delete the linked objects based on an administrator-provided input; and

deleting the linked objects based on the administrator-provided input.

31. (original): The article of manufacture of claim 25, further comprising processing a caching directive that specifies whether the web page should be cached.

32. (original): The article of manufacture of claim 25, further comprising associating an expiration timestamp with the web page, wherein the expiration timestamp defines a time period in which the cached web page is valid.

33. (original): The article of manufacture of claim 32, wherein managing the cached web page and referenced objects further comprises automatically deleting the web page and the referenced objects when the expiration timestamp precedes a current timestamp.

34. (original): The article of manufacture of claim 33, wherein deleting further comprises first, deleting the web page and second, deleting the referenced objects.

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35. (original): The article of manufacture of claim 32, wherein managing the cached web page and referenced objects comprises the steps of:
receiving a request from an administrator to delete all cached web pages according to some administrator-specified selection criteria; and
deleting all cached web pages and referenced objects that satisfy the administrator-specified selection criteria.

36. (original): The article of manufacture of claim 35, wherein deleting further comprises first, deleting the web page and second, deleting the referenced objects.

37. (previously presented): The method of claim 1, wherein at least one of the referenced objects is not stored in said cache.

38. (previously presented): The apparatus of claim 13, wherein at least one of the referenced objects is not stored in said cache.

39. (previously presented): The article of manufacture of claim 25, wherein at least one of the referenced objects is not stored in said cache.